Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership	)	WC Docket No. 07-38

COMMENTS OF
THE INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION

I. Introduction

The Information Technology and Innovation Foundation (ITIF) welcomes the opportunity to weigh in on the critical issues raised in the Commission's Notice of Proposed Rulemaking, Docket No. 07-38. ITIF is a non-profit, non-partisan think tank committed to articulating and advancing a pro-productivity, pro-innovation and pro-technology public policy agenda. Consistent with this mission, ITIF believes that access to high-speed broadband is critical for all citizens if they are to fully participate in and benefit from the increasingly digital economy.

Understanding the deployment and take-up patterns of broadband is an important first step in meeting that goal. Unfortunately, the Commission's nationwide broadband data suffers from some well-documented limitations. The data available at the local level is insufficient for policymakers to make informed decisions, and further, there is evidence that the reported data is not always accurate. Against this backdrop, the Commission's Notice of Proposed Rulemaking represents an important step in improving the measurement of the United States' progress

towards the goal of ubiquitous high-speed broadband. In this important proceeding, ITIF recommends that the Commission:

- **Split the lowest speed tier into two tiers that span 200 kbps to 1 mbps and 1 mbps to 2 mbps.**
- **Report state level data for an evolving "robust broadband" speed standard in addition to the existing 200 kbps standard, and consider collecting and reporting data for both standards at the zip code level.**
- **Promote the development of a user-generated mapping database to complement the Commission's existing data collection efforts.**

II. Background

Since 2000, the Commission has required broadband providers to report subscribership data on a semi-annual basis through Form 477. At the state level, Form 477 collects subscriber numbers by provider technology for five speed tiers, though the Commission reports the speed tier data only aggregated at the national level. Data collected at the local level is less extensive, because providers are required to report only whether they have subscribers in a particular zip code. Based on this data, the Commission identifies those zip codes where broadband is available, as defined by the presence of a single broadband subscriber. Unfortunately, these broadband data are insufficient to meet the need for an accurate and comprehensive nationwide picture of broadband.

ITIF uses the Commission's Form 477 data for its research and analysis, although recent experience has caused us to question the accuracy of the data that the Commission provides. For example, according to the Commission's data, the number of business broadband lines in South Dakota had increased to 63,605 in December 2005, up from just 10,573 six months earlier. North Dakota saw a similar increase. Not only was this growth far in excess of that taking place in other states, but it meant that South Dakota must average over 2.5 broadband lines per business

establishment, given that there are under 25,000 business establishments in the state. This would have put South Dakota in the lead by a wide margin in our measure of broadband penetration.[1] Clearly, the reporting process in these states suffers from serious flaws, and the extent to which such reporting errors exist in other states remains unclear. Nonetheless, the inclusion of such inaccurate numbers in the Commission's data is sufficient to question the validity of the report's methodology.

III. Speed

Beyond these overall methodological problems, the Commission's data on broadband speed is beset by additional shortcomings. For example, speed data is not available at the state or local level, nor are the existing speed categories sufficiently precise or representative of "robust" broadband.

Nationally, Form 477 currently reports the number of broadband subscribers in five speed tiers, ranging from 200 kbps to over 100 mbps. The lowest tier encompasses speeds from 200 kbps to 2.5 mbps. To yield more precise data, the Commission has proposed carving this tier into two separate levels, spanning from 200 kbps to 1 mbps, and 1 mbps to 2.5 mbps, respectively. This would be a useful and welcome revision because the functional difference between a 2.5 mbps connection and a 200 kbps connection is significant.

Some observers have argued that the 200 kbps minimum standard should be raised because a connection at that speed is too slow to qualify as broadband, and the Commission has asked for comments on this suggestion. However, there are good reasons to continue to use a 200 kbps minimum standard. Broadband, even at such slow speeds, is significantly faster than dial-up and has the additional advantage of being always on. Moreover, the evolution of the market should determine the demise of the 200 kbps standard, which will become irrelevant only when most

consumers no longer subscribe to broadband at that speed. Furthermore, as the market evolves, it will become important that the Commission report the data in two separate formats that reflect a) all broadband and b) "robust" broadband. The latter standard should evolve with the market, but should start with a 1 mbps minimum. Further, the Commission should make available the speed data that it already collects at the state level, to the extent that this can be done with statistical significance. It should also consider collecting and reporting data for both overall and robust broadband subscribership at the zip code level.

The Commission has also requested comments on whether it should automatically adjust upwards its existing speed tiers to reflect technological advances. It is our opinion that, because the tiers already encompass speeds between 200 kbps and over 100 mbps, there is no need to move the actual tiers. However, in the future, the Commission may want to add more granularity to the upper tiers as connections with these speeds become more common.

Nonetheless, the idea of a measure that evolves with the market is a good one. The Commission has suggested that a system of evolving speed standards might be based on bandwidth requirements for prevailing broadband applications. Although an evolving standard for robust broadband would be a particularly useful tool (as described above), the process of determining its speed is hardly straightforward. As a result, the Commission should develop a standard of robust broadband by considering both expert analysis and user demand.

Expert analysis could best assess the bandwidth needs of popular sites and applications. However, establishing accurate bandwidth requirements is complicated by actual usage patterns. As more broadband applications become available – many of which require higher speeds – the demands placed on a single residential connection, for example, will likely also increase, with multiple users simultaneously using different applications. Any bandwidth estimates not accounting for

this fact may seriously underestimate the necessary bandwidth under realistic usage conditions.

The Commission should also incorporate broadband user demand in the development of an evolving standard of robust broadband. This method would assume that some substantial percentage of broadband users (such those with connections faster than the median speed) currently receive broadband that is sufficiently robust to handle prevailing applications. However, one drawback of deriving a definition from user demand is the possibility that widely available broadband speeds have not caught up to the requirements of robust broadband applications, and may not for the foreseeable future.

Because both perspectives provide important, though limited, insight into an evolving robust broadband speed standard, the Commission should use both to set such a standard. The Commission would significantly improve the usefulness of the Form 477 broadband speed data by adding this robust standard to the existing overall broadband standard, and also by reporting broadband subscribership for both standards at a state and local level.

IV. An Alternative Method

In addition to improving its Form 477 data, the Commission should also explore innovative ways to collect and report additional information about broadband. The vast majority of broadband data is collected in a traditional top-down fashion. Indeed, the proposals to improve data collection that the Commission has put forth adhere to this model. With such an approach, satisfying the need for more accurate granular data requires either imposing additional reporting requirements on broadband providers, which could be expensive and may raise proprietary concerns, or undertaking a separate, more extensive (and even more expensive) broadband census of Americans.

One promising and economical alternative would employ an open-source model to obtain penetration, speed and price data in a bottom-up fashion. To accomplish this, the Commission or the National Telecommunications and Information Administration (NTIA) would oversee the administration of a website where consumers could automatically test the speed of their broadband connection and enter additional information, including their location and their monthly broadband cost. With the help of mapping technology such as that offered by Google Maps, the resulting proliferation of data points could very quickly yield a nationwide picture of local broadband deployment, prices and speeds.

Currently, there are a number of websites that conduct tests to calculate the upload and download speed of a visitor's broadband connection, and some that plot this information onto interactive maps.[2] The proposed program could either enlist the help of these sites in constructing a nationwide database by aggregating their data or rely solely on its own website. In both cases, the website would need to collect more information than existing sites currently require. It should ask users to provide the average monthly cost of broadband service, name of provider, provider technology (e.g., DSL, fiber, cable, fixed wireless), the user's street address and zip code, and whether the location is business or residential. The proposed site's software would be built to automatically aggregate visitor entries, maintain a database and plot the data on a publicly accessible map. All the individual and aggregate data in the database would also be accessible on the world wide web via user query. To ensure anonymity, participants' street block, rather than their actual street address, would show up in the database and on the map. Only those users who opted to share their street address would have their addresses revealed. Unfortunately, none of the existing sites are as comprehensive as the program outlined here. The most comprehensive known mapping program in the United States, found at www.dslreports.com, does not track price, nor does it give users access to the underlying data.

The quality and accuracy of the resulting picture of national broadband usage would depend in large part on the level of participation, though it would take no more than a handful of participants in any individual neighborhood to generate valuable local information. Because other similar maps already exist, the challenge is to make the most comprehensive map also the definitive one by achieving a critical mass of participants. A public campaign spearheaded by the Commission, NTIA, state PUCs and industry to generate buzz about the project could provide the necessary impetus to make it a success. Discussion of the project on popular websites like MSN and Yahoo!, as well as websites favored by the technologist community, like Slashdot, would be crucial in attracting participants. Advertisements on these sites and others might also lure participants by billing the project as a way for people to determine whether their connection offers a competitive speed and value compared to others in their area. Aided by these efforts to create buzz, a user-generated broadband map could likely attract enough participants to produce meaningful national broadband data.

Nonetheless, even a bottom-up database with strong participation could not provide all the statistical information that a census survey might. For example, it would not indicate the density of broadband penetration with any statistical accuracy, nor would it conclusively show that broadband is unavailable in an area where nobody had participated. It also would not provide information on demographic patterns of broadband coverage. However, the database could quickly and inexpensively yield a snapshot of deployment, enriched with information about accurate actual (as opposed to advertised) speeds, technologies, and prices. Indeed, such precise local data could be an indispensable tool for policymakers. Furthermore, the proposed system would be a "wiki" experiment for public policy, unleashing the collaborative power of the Internet in a way that could serve as a model for a host of other applications.

Moreover, an open source model would enable more robust international broadband comparisons

if we encouraged other nations to participate. As noted above, a Belgium-based organization has already embarked upon a similar project in Europe. These user-generated projects would yield truly comparable speed data in a form that is currently unavailable. For example, some have claimed that Japanese broadband subscribers do not actually receive the 100 mbps speeds that providers in Japan advertise. The project would allow us to more accurately measure how Japan and other nations stack up.

Like any user-generated system, the proposed method could face potential vulnerabilities which would have to be anticipated and countered. For example, although the speed test would be designed to automatically enter speeds into the database, it would need to be secure to prevent hackers from manipulating their recorded connection speeds. If the program were to collaborate with existing speed test websites, these tests would need similar safeguards certified by the program. Additionally, any user-generated system should automatically check a participant's entered zip code to make sure it matches the general location of that participant's IP address, ensuring to some degree of accuracy that a legitimate address had been entered. In another sense, while the democratic nature of the system opens the door to those with destructive motives, it also ensures that the effectiveness of their attempts will be minimized, as long as adequate safeguards are employed. For example, by simply tracking participant IP addresses, the system could guarantee that users do not participate more than once from the same location, effectively diminishing the impact of troublemakers. As long as there is a required threshold for the number of unique participants in a zip code before any of their entries are entered into the database and placed on the map, fraudulent data points would be overwhelmed by those representing honest participants. This threshold could be defined as some small percentage (0.5%, for example) of the number of households in the zip code, a statistic which is available from the Census Bureau.

The cost of building a user-generated mapping database – designing and building a website and

software, as well as running a number of servers around the country for accurate regional speed tests – would likely reach only into the hundreds of thousands of dollars, far cheaper than the alternatives currently under consideration. While this model may not replace the Form 477 reporting structure, it can complement that system by providing valuable data that would be difficult to collect in any other way. In particular, the system would help policymakers and state or regional economic development officials understand where broadband is and where it isn't. Currently, many state and local communities struggle to identify their broadband assets in order to maximize economic development opportunities. Kentucky's ConnectKentucky program, which collects broadband availability data at a local level through a non-governmental organization, is one example of the way in which several states have taken the initiative in the absence of federal data. ConnectKentucky's success has prompted Senator Dick Durbin (D-IL) to call for similar public-private partnerships in other states in his recently proposed Connected Nation Act of 2007 (S. 1190). Certainly, this is a model worth pursuing. However, because our proposal would generate price and speed data, it should be viewed as a complement rather than an alternative to the ConnectKentucky model. At this point, both experiments are worth exploring in the continuing effort to achieve the most comprehensive possible broadband map.

ITIF urges the Commission to review and consider our proposal for an alternative method of data collection that has the potential to dramatically improve our understanding of the state of broadband in the United States.

V. Conclusion

ITIF is grateful for the opportunity to weigh in on the important issues raised by the Commission in its Notice of Proposed Rulemaking. To ensure that broadband deployment proceeds in a timely fashion, policymakers need better broadband data than that which the Commission currently provides. By taking the steps outlined above, the Commission can improve the available data

significantly, which is a critical step down the path to a future of ubiquitous high-speed broadband adoption.

Respectfully Submitted,

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202-449-1351

Notes

[1] Robert D. Atkinson and Daniel K. Correa, "Broadband Telecommunications," *The 2007 State New Economy Index* (Kansas City, MO: Ewing Marion Kauffman Foundation, Feb. 2007). <www.itif.org/files/2007_State_New_Economy_Index_Small.pdf>.

[2] See www.speedmatters.org for an example of an automated speed test. Also, www.dslreports.com plots participants' connection speed, provider and technology onto an interactive Google map. It, however, does not gather information on price. In Europe, Belgium-based ISP Monitor (www.ispmonitor.be/en/maps/) plots similar information.